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(19) (CA) **APPLICATION FOR CANADIAN PATENT** (12)

(54) **Expansible Grocery Sack**

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(57) 11 Claims

Notice: The specification contained herein as filed

**Canada**

EXPANSIBLE GROCERY SACK

ABSTRACT

The present invention provides one or more expansion pleats extending from the bottom to the top region of handled plastic grocery sacks.

EXPANSIBLE GROCERY SACK

The present invention relates to a thermoplastic film grocery sack having handles which are integral extensions of the walls thereof.

5 A more or less standard size grocery sack having its origins in the once-familiar kraft paper grocery sack is the 1/6 barrel size bag. Originally, the cubic capacity of this bag was approximately 1440 cubic inches. In present day thermoplastic film grocery  
10 sacks, this volume is somewhat less. It has been one of the objects over the years to realize the most bag volume employing the least amount of bag film for obvious economic considerations. In U.S. Patent No. 4,554,192, this object was achieved by eliminating the  
15 so-called "trapped gusset" in the bottom of the bag. By employing diagonal seals in the bottom of the bag, maximum usable volumetric efficiency could be achieved.

As resin quality has improved and film gauge has decreased, increased volumetric capacity can be  
20 achieved by economically employing more square inches of thermoplastic film.

It is an object of the present invention to present a thermoplastic film grocery sack which is capable of increasing in girth during use and,  
25 therefore, provide more capacity.

It is another object of the present invention to provide such a bag which, in addition to increased volumetric capacity, has the ability to carry more weight.

30 The present invention is concerned with a thermoplastic film bag comprising bottom, front, rear and gusseted side walls, an open mouth top portion, said mouth portion having loop handles as integral extensions of said walls at opposite ends thereof, and  
35 having the improvement comprising including at least

one pleat extending from the sack bottom to the uppermost region of the bag.

Fig. 1 is a front elevation view of the thermoplastic sack of the present invention;

Fig. 2 is an end view taken along the lines 2-2 of Fig. 1 partly expanded;

Fig. 3 is a front elevation view of a fragment of an alternative version of the bag structure of the present invention;

Fig. 4 is an end view taken along the lines 4-4 of Fig. 3 partly expanded;

Fig. 5 is a front elevation view of another form of the bag structure of the present invention; and

Fig. 6 is an end view taken along the lines 6-6 of Fig. 5 in partly expanded form.

During the manufacture of the grocery sacks of the present invention, by placing pleats in the bag structure, it can be appreciated that a bag of a given lay-flat dimension can be obtained which, during use, can expand in girth to yield a greater volume than would otherwise be obtainable. As employed herein, the term "pleat" is intended to include all forms of known pleats. In general, a pleat is a fold made by doubling material over on itself. In cross-section, pleats can somewhat resemble a Z-fold, a W-fold, a V-fold, etc. The invention contemplates employing at least one pleat somewhere along a longitudinal top-to-bottom line of a bag or a plurality of pleats longitudinally located about the girth of the bag.

Figs. 1 and 2, for example, show a thermoplastic grocery bag 10 having loop handles 12 as integral extensions of rear walls 11, front walls 13 and side walls 21. The handles are sealed at the top along line 18 and the bag bottom is sealed along line 20. A cutout in the bag structure along lines 15 defines the handle shape in the open-mouth portion. The side walls 21 are inwardly extended to form a gusset along line

22. The handles are shown including a suspension orifice 14 illustrated as being a straight cut extending through all 4 or more film layers of the handle. It is to be understood that this orifice can have any shape which does not material weaken the strength of the handles. Each of the 4 gusset folds on opposite sides of the bag are shown to have included therein pleats 16 which extend from the bottom seal 21 to the handle seal 18. As shown, the pleats are approximately one-half the width of the gusset fold on each side of the bag. Thus, in a bag having 3-inch gussets on each side, the pleats contribute an additional one and a half inches of film width. During the loading of such a bag, while opposite ends of the pleats are confined, the central region of the bag in the handle areas can expand in girth to accommodate an increased volumetric load. The bag of Fig. 1 can include an optional tab member at the center of the bag mouth in order to accommodate the suspension of bag packs and the dispensing of individual bags therefrom. Bags of the type shown in Fig. 1, collected into a bag pack arrangement, can be conveniently suspended from 2 elongated parallel rods by threading the pack through orifices 14. Other conventional means of suspending and dispensing the bag packs are also contemplated, such as those described in U.S. Patent No. 4,165,832.

Figs. 3 and 4 show, in fragmented form, a bag which is, in all essential respects, the same as that shown in Fig. 1 except that a variation in the use of pleats is shown. The bag 20 of Figs. 3 and 4 show the use of a plurality of external pleats 26 extending from top seal 18 to bottom seal 20. These pleats are somewhat in the nature of "accordion" pleats which can permit girth expansion to the cumulative width of the individual pleat dimensions. In addition, it will be appreciated that the plurality of pleat folds will add

substantially to the strength of the bag in the region of the handles.

Figs. 5 and 6 illustrate a bag 30 which, in all essential respects, is the same as those illustrated in Figs. 1-4 except that a plurality of pleats 36 are shown extending longitudinally in the front and rear walls of the bag from the bottom seal 20 to bag mouth 15. These pleats will permit girth expansion of the bag during filling. Considerable tear resistance in the bag mouth region can be obtained by impressing a horizontal seal 38 near the bag mouth in the front and rear walls of the bag.

As indicated above, the number of pleats in the bags of the present invention can range from 1 to a plurality of specifically located pleats. The pleats can be located in the gusseted side walls, in line with the handles in the front and rear faces of the bag, in the front and rear faces of the bag extending from the bottom to the open mouth top portion, or the pleats may be located around the entire girth of the bags. The dimensions of the fold will be dictated by considerations of numbers of square inches of thermoplastic film employed in each bag versus the gain in strength and desired girth expansibility. A preferred use includes one or two pleats in each gusset fold.

Bags of the structures described can be formed by employing any suitable thermoplastic material, such as a polyolefin, and more particularly, polyethylene of any gauge. Gauges ranging from about 0.25 to about 5 mils are contemplated. In employing the term "polyethylene" it is employed generically to include all forms of polyethylene, including low density polyethylene, linear low density copolymers of ethylene and another alpha-olefin, high density polyethylene, mixtures and blends of the same. The contemplated bags of the present invention can be formed by utilizing

conventional bag making technology modified by the inclusion of folding means to include pleats where desired in the bag structure.

The method of preparing the subject bags can comprise:

- (a) forming a tube of a thermoplastic film;
- (b) collapsing said tube while simultaneously forming therein 2 oppositely disposed, parallel gussets and employing pleat forming means to form pleats in the collapsed tube;
- (c) forming transverse sealing and severing seams at bag length distances apart across and through said collapsed tube;
- (d) collecting the resulting structures in a stack; and
- (e) forming a handle and bag mouth opening at one end of the stack. During this latter operation, appropriate suspension orifices can be formed in the handles of the bag pack.

Although the present invention has been described with preferred embodiments, it is to be understood that modifications and variations may be resorted, without departing from the spirit and scope of this invention, as those skilled in the art can readily understand. Such modifications and variations are considered to be within the purview and scope of the appended claims.

CLAIMS:

1. In a thermoplastic film bag comprising bottom, front, rear and gusseted side walls, an open mouth top portion, said mouth portion having loop film handles as integral extensions of said walls at opposite ends thereof, the improvement comprising including at least 1 pleat extending from the bag bottom to the uppermost region of the bag.

2. The bag of Claim 1 wherein the number of pleats can range from 1 to a plurality of specifically located pleats.

3. The bag of Claim 2 wherein the pleats are located in the gusseted side walls.

4. The bag of Claim 2 wherein the pleats are located in line with the handles in the front and rear faces of the bag.

5. The bag of Claim 2 wherein the pleats are located in the front and rear faces of the bag extending from the bottom to the open mouth top portion.

6. The bag of Claim 5 wherein at least some of the pleats in the region of the open mouth top portion are sealed so as to resist unrestricted unfolding.

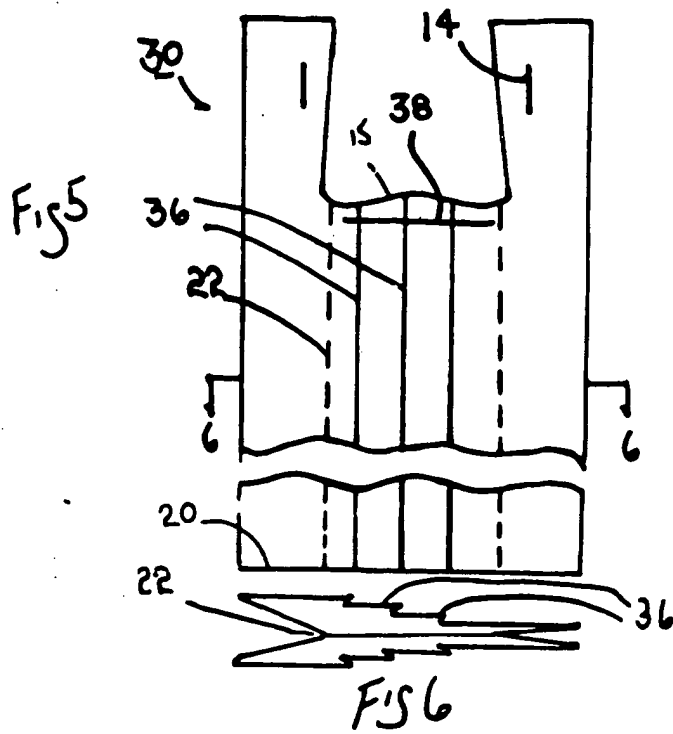
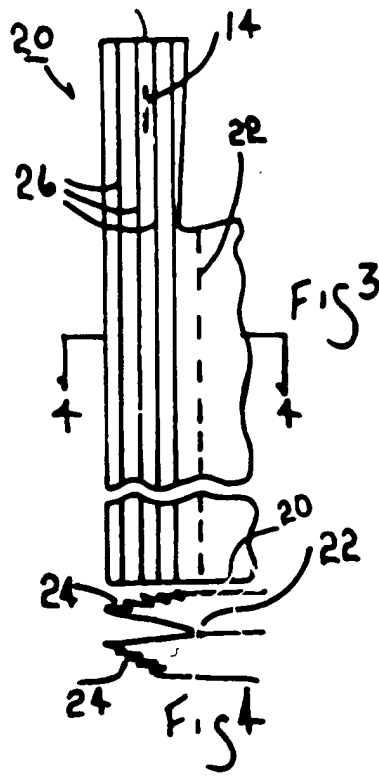
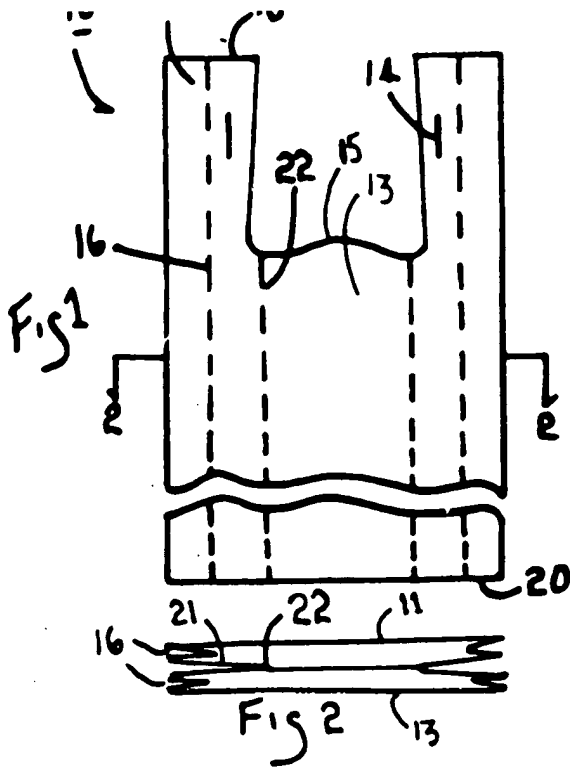
7. A plurality of bags as described in Claim 8 arranged in registration in bag pack form.

8. In a thermoplastic film bag comprising a bottom seal, front and rear walls, and side walls each having a single gusset, an open mouth portion having loop handles as integral extensions of said walls at opposite ends thereof, the improvement comprising one or more additional pleats in the gusset regions of the walls which extend from the bottom seal to the top loop handles.

9. The bag of Claim 8 having additional pleats in the gusset folds of each side wall.



10. The bag of Claim 9 having two additional pleats in the gusset folds of each side wall.
11. The bag of Claim 8 having a plurality of accordion pleats in the handles extending from the bottom seal to the top loop handles.



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Fig. 4

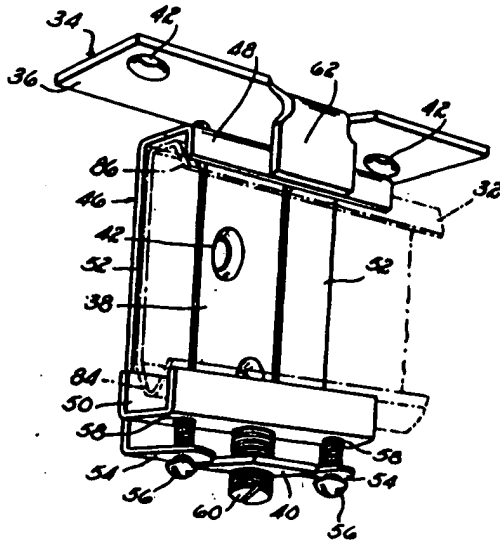


Fig. 7

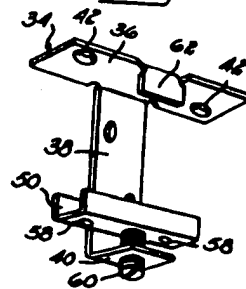


Fig. 8

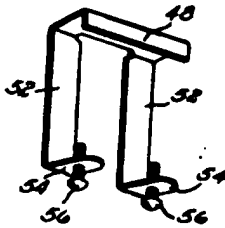


Fig. 5

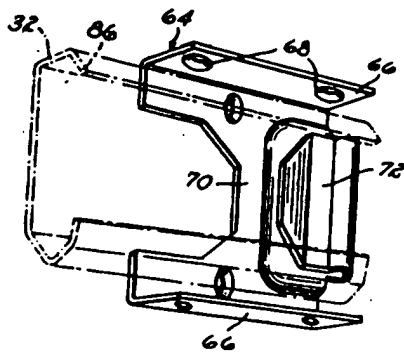
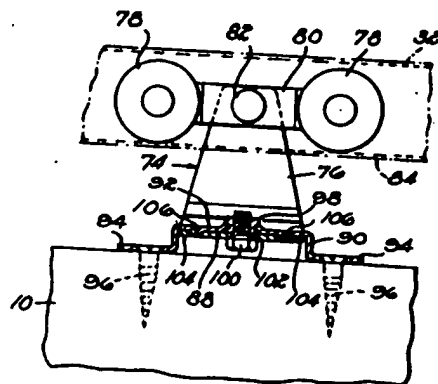


Fig. 6



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